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A STUDY OF ARTIFICIAL INTELLIGENCE (AI) TOOLS-IMPACT AND BENEFITS IN HIGHER EDUCATION FOR PRESENT AND FUTURE

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Abstract:

In India Education is a cornerstone of societal development with its diverse population and vast educational system. Integrating technology can bridge gaps and foster equitable learning opportunities. Artificial Intelligence (AI) is now one of the essential segments of the higher education system. AI also delves into the benefits, challenges, and implications of integrating AI tools into educational systems. AI focuses on how it can enhance student's learning experiences, support teachers, and address educational disparities.

This study investigates the impact and benefits of AI tools in Higher Education for the Present and Future. Artificial Intelligence (AI), as a transformative technological tool, offers innovative solutions to traditional educational challenges. Research also examines how AI influences the current state of AI tools adoption in the higher education system and its future teaching-learning prospects.

Keywords: *AI, Computers, Software, Hardware, Design tools, Education systems, Digital literacy, Open sources.*

Introduction:

Artificial Intelligence (AI) encompasses a wide range of technologies, including machine learning, natural language processing, computer vision, and robotics. These technologies enable AI systems to perform complex tasks, such as speech recognition and face detection, with remarkable accuracy with related hardware and software.

The concept of "artificial intelligence" goes back thousands of years, to ancient philosophers considering questions of life and death. In ancient times, inventors made things called "automatons" which were mechanical and moved independently of human intervention. The word "automaton" comes from ancient Greek and means "acting of one's own will." One of the earliest records of an automaton comes from 400 BCE and refers to a mechanical pigeon created by a friend of the philosopher Plato. Many years later, one of the most famous automatons was created by Leonardo da Vinci around the year 1495.

Now the AI concept is totally changed, *Artificial Intelligence (AI)* is technology that enables computers (hardware and software) and machines to simulate human learning, comprehension, problem solving, decision making, creativity, autonomy, education systems and developing digital literacy. Applications and devices equipped with AI tools as an open-source software can see and identify objects. They can understand and respond to human language by using computer hardware and software. They can learn from new information and experience. They can make detailed recommendations to users and experts for betterment of education systems. They can act independently, implementing and replacing the need for human intelligence or intervention (Example - a self-driving car).

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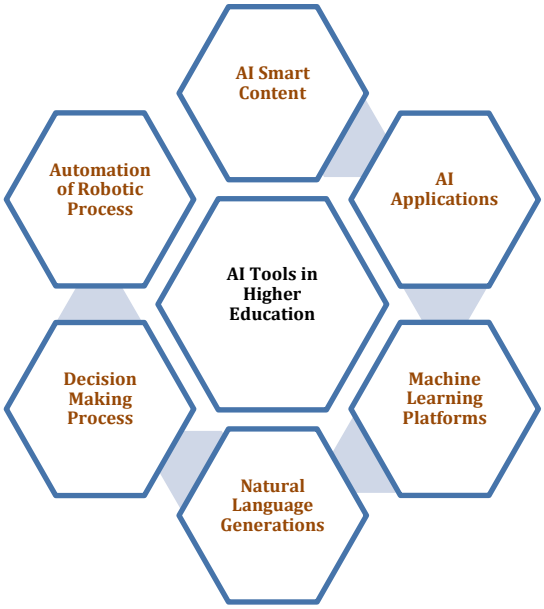
For higher education, AI technologies are powerful and well-suited to the enrichment of educational objectives. Indeed, the past two decades have seen considerable AI advances in education for growth of digital literacy. AI tools have the potential to revolutionize education by personalizing teaching methods to suit individual student needs, providing prompt feedback, and automating administrative tasks. AI tools can also assist in grading and assessment, freeing educators to focus on developing curriculum and providing quality instruction.

Artificial Intelligence (AI) tools in education are being used globally to personalize learning, automate administrative tasks, and provide real-time feedback. In India, the adoption is still in its nascent stage, with experimenting various applications in higher education institutions. Multiple AI tools can be utilized in higher education to automate repetitive tasks, enhance student engagement, and provide data-driven insights for academic decision-making to the administration. Higher education institutions across the globe, including India, are effectively adopting AI tools in varying capacities.



Objectives of the Study:

1. To analyze the present impact of *Artificial Intelligence (AI)* tools in higher education.
2. To identify the potential benefits and challenges of implementing *Artificial Intelligence (AI)* tools in higher education for present and future.
3. To provide recommendations for effective *Artificial Intelligence (AI)* tools integration in higher education for future.

Literature Review:

Now a days, *Artificial Intelligence (AI)* has become a vital part of the virtual world. *Artificial Intelligence (AI)* plays an important role in general education and higher education (Edtech, 2020). For example, the efficient uses of filtering emails, advertising, applications, YouTube, and virtual assistants such as Google, digital libraries, Google Scholar, and other digital research engines in any higher institution worldwide (García-Vélez et al., 2021). However, *Artificial Intelligence (AI)* is both weak and robust, according to Ma & Siau (2018). In other words, Ma and Siau (2018) label AI as fragile when it is limited to small, restricted, and structured tasks such as collecting data but sharp and robust when performing most or all cognitive tasks that are typically human (Beight & Reddell, 2005).

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The 2023, *Artificial Intelligence (AI)* Index Report from the Stanford Institute for Human-Centered AI has documented notable acceleration of investment in AI as well as an increase of research on ethics, including issues of fairness and transparency. Of course, research on topics like ethics is increasing because problems are observed. Ethical problems will occur in education, too. The report found a striking interest in 25 countries in the number of legislative proposals that specifically include *Artificial Intelligence (AI)*. In the United States, multiple executive orders are focused on ensuring AI is trustworthy and equitable, and the White House Office of Science and Technology Policy has introduced a *Blueprint for an AI Bill of Rights* (Blueprint) that provides principles and practices that help achieve this goal.

These initiatives, along with other AI-related policy activities occurring in both the executive and legislative branches, will guide the use of AI throughout all sectors of society. In Europe, the European Commission recently released Ethical guidelines on the use of *Artificial Intelligence (AI)* and data in teaching and learning for educators.

Artificial Intelligence (AI) tools:

Artificial Intelligence (AI) tools offer various learners links about the topics required by the subject matter and eases and inspires both learner and tutor by addressing different learning styles such as autonomous learning, visual learning, e-learning, audio-visual learning, and deep learning. An AI is perfect in covering language and academic integrity issues, semantic, pragmatic, and cognitive levels, in many cases, require the intervention of the human mind to perform the last touch. AI tools enable independent learning as the learner becomes autonomous and free to access input anytime and anywhere. AI tools positively influence education by providing intelligent computer-assisted instruction that facilitates learning intuition and provides expert systems to diagnose and assess learning outcomes.

Best Artificial Intelligence (AI) Tools:

➔AI Assistants (Chatbots): ChatGPT, Claude, Gemini, DeepSeek, Grok
➔ App Builders & Coding: Bubble, Bolt, Lovable, Cursor, v0
➔ Customer Service: Tidio AI, Hiver
➔ Email: Hubspot Email Writer, SaneBox, Shortwave
➔Grammar and Writing Improvement: Grammarly, Wordtune
➔ Graphic Design: Canva Magic Studio, Looka
➔ Image Generation: Midjourney, DALL·E 3
➔ Knowledge Management: Notion AI Q&A, Guru
➔ Marketing: AdCreative
➔ Music Generation: Suno, Udio
➔ Notetakers and Meeting Assistants: Fathom, Nyota
➔ Presentations: Gamma, Presentations.ai
➔ Project Management: Asana, ClickUp
➔ Recruitment: Textio, CVViZ
➔ Research: Deep Research
➔ Resume Builders: Teal, Kickresume
➔ Sales: Clay
➔ Scheduling: Reclaim, Clockwise
➔ Search Engines: Perplexity, ChatGPT search
➔ Social Media Management: Vista Social, FeedHive
➔ Video Generation and Editing: Synthesia, Runway, Filmora, OpusClip
➔ Voice Generation: ElevenLabs, Murf
➔ Writing: Rytr, Sudowrite

Benefits of Artificial Intelligence (AI) Tools in Higher Education:

Artificial Intelligence (AI) does not impact only the learning and teaching process but also the assessing and grading process. For instance, AI checks assignments and research projects through software such as Turnitin against billions of resources in no time. Consequently, similarities are easily generated to judge whether the learner plagiarized. Similarly, online rubrics and grading forms are added to assignments with criteria

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and scales, and final grades are automatically added to the submitted work without any hassle. Furthermore, *Artificial Intelligence (AI)* offers interactive ways of providing constructive feedback to the learner, easy access in a relaxed manner anytime and anywhere, with more privacy and autonomy. Additionally, the instructor can write or record feedback to facilitate and improve learning from errors.

- **Improved Learning Outcomes:** Adaptive learning systems ensure that students receive content tailored to their learning pace and style.
- **Efficient Resource Utilization:** Automation of administrative tasks saves time and reduces operational costs.
- **Data-Driven Insights:** Predictive analytics help identify at-risk students and design interventions to improve retention rates.
- **Global Accessibility:** AI enables online education, allowing institutions to reach a wider audience and promote lifelong learning.
- **Research Advancement:** AI accelerates data analysis, enhancing the quality and speed of academic research.

Applications of Artificial Intelligence (AI) Tools in Higher Education:

Artificial Intelligence (AI) tools is reshaping administrative duties within higher education, particularly in tasks like grading examinations, assessing homework, and providing guidance to students. Academics often dedicate substantial time and effort to these responsibilities, which can be alleviated through the implementation of automated grading systems driven by Artificial Intelligence (AI). These systems streamline the evaluation and assessment process, allowing educators to save time and redirect their focus towards other critical tasks such as research, curriculum development, or providing personalized support to students. With the emergence of Learning Management Systems (LMS) equipped with Artificial Intelligence (AI) capabilities, educators have access to sophisticated tools that employ natural language processing algorithms to analyze written responses and essays, delivering consistent and accurate feedback to both educators and students alike.

- **Efficient Administrative Automation:** Tools like Chatbots and Enterprise Resource Planning (ERP) systems streamline admissions, attendance, fee collection, and resource management.
- **Automated Assessment and Feedback:** Automated grading systems and real-time performance tracking tools help teachers focus on instructional quality and on qualitative feedback.
- **Personalized Language Learning Platforms:** AI-powered Coursera and edX adapt content delivery to individual learning needs, enhancing student outcomes and apps such as Duolingo facilitate effective language acquisition, catering to multilingual requirements in India.
- **Virtual Teaching Assistants for Skill Development:** AI-based IBM Watson and ChatGPT platforms answer student queries and assist with academic advising, offers training in emerging technologies like machine learning, data analytics, and blockchain.
- **Potential Benefits of Artificial Intelligence (AI) Tools**

  - **Enhanced Learning Outcomes:** Personalized content delivery and adaptive learning systems cater to diverse learning styles.
  - **Teacher Support:** AI assists in lesson planning, grading, and identifying at-risk students.
  - **Inclusivity:** AI can support students with disabilities through assistive technologies.
  - **Skill Development:** AI introduces students to 21st-century skills, preparing them for future job markets.

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➢ **Trends in Artificial Intelligence (AI) Tools Adoption**

- **Blended Learning Models:** Combining AI tools with traditional teaching methods for a hybrid approach.
- **Virtual and Augmented Reality:** Enhancing experiential learning through immersive technologies.
- **AI-Driven Research Tools:** Facilitating interdisciplinary research and collaboration across institutions.
- **Global Partnerships:** Collaborations between universities and edtech companies to drive innovation.

➢ **Challenges in Artificial Intelligence (AI) Tools Implementation**

- **Digital Divide:** Limited access to technology and internet connectivity among urban and rural areas.
- **High Costs:** Implementing Artificial Intelligence (AI) systems requires significant investment in infrastructure and training.
- **Data Privacy Concerns:** Ensuring the security and ethical use of students' data.
- **Teacher Training:** Lack of adequate training for teachers to effectively use AI tools.
- **Bias in Artificial Intelligence (AI) Systems:** Algorithms may reflect and reinforce societal biases, affecting fairness in assessments and opportunities.

➢ **Government Initiatives and Policy Support**

- **National Education Policy (NEP) 2020:** Encourages the integration of technology and use of AI tools in Indian higher education.
- **Digital India Campaign:** Aims to improve digital infrastructure across the country.
- **Global Initiatives:** United Nations Educational, Scientific and Cultural Organization (UNESCO) and World Bank's programs promoting AI in education.
- **Public-Private Partnerships:** Collaborations with edtech companies to promote *Artificial Intelligence (AI)* infrastructure and skill development programs.

➢ **Recommendations for Artificial Intelligence (AI) Tools**

- **Capacity Building:** Invest in teachers and administrators training programs to enhance digital literacy to effectively use *Artificial Intelligence (AI)* tools.
- **Infrastructure Development:** Ensure equitable access to digital tools and high-speed internet for all.
- **Localized Solutions:** Design AI tools tailored to regional languages and cultural contexts that cater to diverse linguistic and cultural contexts.
- **Ethical Artificial Intelligence (AI) Practices:** Develop frameworks to address robust data privacy and algorithmic bias.
- **Continuous Assessment:** Monitor the impact of *Artificial Intelligence (AI)* tools to ensure they meet educational goals.

Future of Artificial Intelligence (AI) Tools in Higher Education:

Artificial Intelligence (AI) tools have the potential to transform higher education by enhancing learning experiences, streamlining operations, and fostering innovation. However, its successful implementation requires addressing challenges such as the digital divide, ethical concerns, and resistance to change. The integration of *Artificial Intelligence (AI)* tools in Indian higher education holds immense promise for transforming learning experiences and addressing systemic challenges. By adopting a collaborative and inclusive approach, higher education institutions can harness the power of *Artificial Intelligence (AI)* tools to build a future-ready academic and entrepreneurship enabled educational ecosystem in India.

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